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Indigenous knowledge and antimicrobial properties of plants used in ethnoveterinary medicine

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INTRODUCTION

The use of chemical pesticides and pharmaceutical drugs to manage livestock pests and diseases is anathema to the environment and leads to the development of resistance. Most resource-poor farmers also face problems, such as inaccessibility, unaffordability and inappropriate use of chemical pesticides and drugs. Faced with these constraints, livestock farmers in Namibia and other African countries turn to indigenous knowledge as an alternative option and as a key to unlock the power of plants to control various vectors and diseases of livestock. Utilization of plant extracts as ethnoveterinary medicines (EVMs) is perhaps one of the most sustainable methods readily adaptable to rural livestock-farming communities. Plants identified as herbal remedies in the management of livestock diseases, especially those with antimicrobial and antiparasitic properties, present considerable potential for further scientific research which may lead to the discovery of new and safer drugs.

Although many rural communal farmers use plants to treat livestock diseases, the current status of information on the use of plants in EVM Namibia, and the biological activities and toxicities of this flora, is still inadequate. For example, a complete systematic ethnobotanical list has not yet been compiled, creating an urgent need to record EVM knowledge in Namibia. Work in this field could help increase livestock productivity through improved management of diseases and parasites. Improved livestock productivity will, in turn, spur many socioeconomic benefits,

such as increased family incomes and wealth, secure livelihoods, and improved food security and nutrition.

By way of preamble, this chapter reviews important issues related to livestock farming and disease status, and beef production and marketing in Namibia, and defines EVM.

Livestock farming and disease status in Namibia

Namibia is the most arid country in sub-Saharan Africa. Only 2% of Namibia's land receives enough rainfall to grow crops. As a result of this climatic quandary, most of the farming activities in Namibia revolve around livestock farming. Up to 40% of Namibians are small-scale farmers that eke out a living through herding on marginal and fragile rural lands. Extensive small-stock farming is the main agricultural activity in areas that receive less than 200 mm of rain per annum, while large-stock farming is prominent in areas where average annual rainfall exceeds 300 mm. Mixed large- and small-stock farming is practised in areas where rainfall is 200–300 mm. In communal areas where subsistence farming practices are common, livestock provide a variety of benefits, for example, milk, meat and draft power. Livestock is also a symbol of local wealth and provides a medium of exchange when buying and selling, and a means for paying lobola and compensation.

Small-scale farmers living on marginal lands in communal areas own about 10% of all the sheep, 60% of the cattle and 65% of the goats in Namibia (NNFU, 2008). Livestock productivity is hampered by several infectious bacterial diseases, including black-quarter, diarrhoea, anthrax, botulism, brucellosis, tuberculosis, rabies, foot-and-mouth disease (FMD), hoof problems and pleuropneumonia. Other ailments are caused by parasitic worms and protozoa. Overall, animal diseases in Namibia are caused by pathogens, most of which are said to be emerging or re-emerging.

About 40% of all the cattle with densities of up to 10–44 head per square kilometre, are found in the northern communal areas, which are prone to FMD (NNFU, 2008). The veterinary cordon fence (VCF) divides the northern FMD-prone area from the southern FMD-free area. All animals north of the VCF undergo a 21-day quarantine period before slaughtering (NNFU, 2008). In order to improve the incomes and livelihoods of northern communal farmers, there are discussions to enable them to access markets by allowing the free movement of domestic animals from the north to Windhoek.

Beef production and marketing in Namibia

Beef production is the main activity in Namibia's agricultural sector, constituting approximately 85% of agricultural incomes and, on average, 10% of gross national product (NNFU, 2008). About 85% of Namibian beef is exported to the European